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## NOTICE OF ALLOWANCE AND FEE(S) DUE

021567 7590 07/11/2003

WELLS ST. JOHN P.S.  
601 W. FIRST AVENUE, SUITE 1300  
SPOKANE, WA 99201

EXAMINER

DANG, PHUC T

ART UNIT

CLASS-SUBCLASS

2818

438-077000

DATE MAILED: 07/11/2003

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,201	01/15/2002	Harry Rosenberg	(HO58-068) 34593 CON.1	4057

TITLE OF INVENTION: TANTALUM SPUTTERING TARGET AND METHOD OF MANUFACTURE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1300	\$300	\$1600	10/14/2003

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

### HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.  
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE  
**Commissioner for Patents**  
**Alexandria, Virginia 22313-1450**  
**Fax** (703)746-4000

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

021567 7590 07/11/2003

WELLS ST. JOHN P.S.  
601 W. FIRST AVENUE, SUITE 1300  
SPOKANE, WA 99201

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$1300	\$300	\$1600	10/14/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
DANG, PHUC T	2818	438-077000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

## **3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)**

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
- ☐ Publication Fee
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Commissioner is hereby authorized to charge the required fee(s), or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)

(Date)

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

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TRANSMIT THIS FORM WITH FEE(S)



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021567	7590	07/11/2003	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			DANG, PHUC T	
			ART UNIT	PAPER NUMBER
			2818	
DATE MAILED: 07/11/2003				

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The patent term adjustment to date is 0 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 0 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (<http://pair.uspto.gov>)

Any questions regarding the patent term extension or adjustment determination should be directed to the Office of Patent Legal Administration at (703)305-1383.



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WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201 UNITED STATES			DANG, PHUC T	
			ART UNIT	PAPER NUMBER
			2818	
DATE MAILED: 07/11/2003				

## Notice of Fee Increase on January 1, 2003

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after January 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on January 1, 2003. See Revision of Patent and Trademark Fees for Fiscal Year 2003; Final Rule, 67 Fed. Reg. 70847, 70849 (November 27, 2002).

The current fee schedule is accessible from: <http://www.uspto.gov/main/howtofees.htm>.

If the issue fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due," but not the correct amount in view of the fee increase, a "Notice to Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice to Pay Balance of Issue Fee," if the response to the Notice of Allowance and Fee(s) due form is to be filed on or after January 1, 2003 (or mailed with a certificate of mailing on or after January 1, 2003), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

**Notice of Allowability**

Application No.

10/053,201

Examiner

PHUC T DANG

Applicant(s)

ROSENBERG ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on May 13, 2003.
2. ☒ The allowed claim(s) is/are 31-32, 34-50 and 54-96 (renumbered as in new claims 1-62).
3. ☒ The drawings filed on 15 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892)  | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)          |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____             |
| 5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. <u>9</u> . | 6 <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material   | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
|  | 9 <input type="checkbox"/> Other  |

PHUC T. DANG  
EXAMINER

PD



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## DETAILED ACTION

### Response to Amendment

1. This Office Action is in response to Amendment filed on May 13, 2003.

Claims 85-96 have been added.

Claims 31-32, 34-50 and 54-96 are renumbered as in new claims 1-62.

### Examiner's Statement of Reasons for Allowance

2. Claims 31-32, 34-50 and 54-96 are allowed.
3. The following is an examiner's statement of reasons for allowance:

With respect to claim 31, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a layer comprising high purity tantalum, less than about 500 ppm, by weight, total metallic impurities, less than 20 ppm, by weight, total of tungsten and molybdenum, and less than 50 ppm, by weight, niobium, in combination with the rest of the limitations of claim 31.

With respect to claim 35, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a sputtering target blank comprising tantalum, less than 500 ppm by weight (ppmw) total metallic impurities, less than 5ppmw total molybdenum and tungsten, less than about 100 ppmw oxygen, and less than 50 ppmw niobium, in combination with the rest of the limitations of claim 35.

With respect to claim 40, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a sputtering target blank comprising tantalum, less than 500 ppm total metallic impurities, less than 5 ppmw total of molybdenum and tungsten, less than about

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100 ppmw oxygen, and less than or equal to 10 ppbw each of uranium and thorium, in combination with the rest of the limitations of claim 40.

With respect to claim 41, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a sputtering target blank comprising tantalum, less than 500 ppm by weight (ppmw) total metallic impurities, less than 2 ppmw total of molybdenum and tungsten, and less than 25 ppmw oxygen, in combination with the rest of the limitations of claim 41.

With respect to claim 54, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum sputtering target blank comprising tantalum and less than 5 ppm by weight (ppmw) molybdenum or tungsten, and less than 3 ppmw niobium, in combination with the rest of the limitations of claim 54.

With respect to claim 59, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum sputtering target blank comprising tantalum, less than 5 ppmw each of molybdenum and tungsten, and less than 50 ppmw niobium, in combination with the rest of the limitations of claim 59.

With respect to claim 63, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum sputtering target blank comprising tantalum and less than 50 ppmw total of molybdenum, tungsten, and niobium, in combination with the rest of the limitations of claim 63.

With respect to claim 73, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum material comprising tantalum and less than 5 ppmw

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molybdenum or tungsten, and less than 3 ppmw niobium, in combination with the rest of the limitations of claim 73.

With respect to claim 74, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum material comprising tantalum, less than 5 ppmw each of molybdenum and tungsten, and less than 50 ppmw niobium, in combination with the rest of the limitations of claim 74.

With respect to claim 75, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum material comprising tantalum and less than 50 ppmw total of molybdenum, tungsten, and niobium, in combination with the rest of the limitations of claim 75.

With respect to claim 76, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum material sputtering precursor comprising tantalum and less than 5 ppmw molybdenum or tungsten, and less than 3 ppw niobium, in combination with the rest of the limitations of claim 76.

With respect to claim 77, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum material sputtering precursor comprising tantalum, less than 5 ppmw each of molybdenum and tungsten, and less than 50 ppw niobium, in combination with the rest of the limitations of claim 77.

With respect to claim 78, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a tantalum material sputtering precursor comprising tantalum and less



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than 50 ppmw total of molybdenum, tungsten, and niobium, in combination with the rest of the limitations of claim 78.

With respect to claim 79, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests sputtered tantalum material comprising tantalum and less than 5 ppmw molybdenum or tungsten, and less than 3 ppw niobium, in combination with the rest of the limitations of claim 79.

With respect to claim 80, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests sputtered tantalum material comprising tantalum, less than 5 ppmw each of molybdenum and tungsten, and less than 50 ppw niobium, in combination with the rest of the limitations of claim 80.

With respect to claim 81, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests sputtered tantalum material comprising tantalum and less than 50 ppmw total of molybdenum, tungsten, and niobium, in combination with the rest of the limitations of claim 81.

With respect to claim 82, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests deposited tantalum material comprising tantalum and less than 5 ppmw molybdenum or tungsten and less than 3 ppw niobium, in combination with the rest of the limitations of claim 82.

With respect to claim 83, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests deposited tantalum material comprising tantalum, less than 5 ppmw

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each of molybdenum and tungsten, and less than 50 ppmw niobium, in combination with the rest of the limitations of claim 83.

With respect to claim 84, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests deposited tantalum material comprising tantalum and less than 50 ppmw total of molybdenum, tungsten, and niobium, in combination with the rest of the limitations of claim 84.

With respect to claim 85, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests an ingot comprising high purity tantalum comprising tantalum, less than about 500 ppm, by weight, total metallic impurities, less than about 50 ppm, by weight, niobium, and less than about 50 ppm, by weight, tungsten, or molybdenum, in combination with the rest of the limitations of claim 85.

With respect to claim 89, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests an ingot comprising tantalum, less than about 500 ppm, by weight, total metallic impurities, and less than 5 ppmw each of molybdenum and tungsten in combination with the rest of the limitations of claim 89.

With respect to claim 91, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a powder comprising high purity tantalum, less than about 500 ppmw total metallic impurities, less than about 50 ppmw, by weight, niobium, and less than about 50 ppmw tungsten or molybdenum, in combination with the rest of the limitations of claim 91.

With respect to claim 95, the prior art of record, taken alone or in combination, fails to teach or reasonably suggests a powder comprising tantalum, less than about 500 ppmw total

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metallic impurities, and less than about 5 ppmw each of molybdenum and tungsten, in combination with the rest of the limitations of claim 95.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submission should be clearly labeled "Comments on Statement of Reasons for Allowance".

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is 703-305-1080. The examiner can normally be reached on 8:00 am-5:00 pm.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on 703-308-4910. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841 for regular communications and 703-308-5841 for After Final communications.

7. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

Examiner

Art Unit 2818

PP  
PHUC T. DANG  
EXAMINER



July 3, 2003